

## CLAIMS

1. A battery mounted integrated circuit device, comprising:

(1) a semiconductor substrate;

(2) a solid state battery mounted on said semiconductor substrate;

(3) an integrated circuit mounted on said semiconductor substrate;

(4) a first diffusion layer, containing an N-type impurity, formed between a region of said semiconductor substrate where said solid state battery is mounted and an region of said semiconductor substrate where said integrated circuit is mounted; and

(5) a second diffusion layer, containing an N-type impurity, formed below said region of said semiconductor substrate where said solid state battery is mounted, and overlapping with said first diffusion layer,

said solid state battery comprising a positive electrode, a negative electrode, and a solid electrolyte disposed between said positive electrode and said negative electrode,

the concentration of said N-type impurity in said first diffusion layer is higher than the concentration of said N-type impurity in said second diffusion layer.

2. The battery mounted integrated circuit device in

accordance with claim 1, wherein the concentration of said N-type impurity in said first diffusion layer is not less than  $1 \times 10^{19}$  atoms/cm<sup>3</sup>.

3. The battery mounted integrated circuit device in accordance with claim 1, wherein the ratio of the concentration of said N-type impurity in said first diffusion layer to the concentration of said N-type impurity in said second diffusion layer is not more than  $1 \times 10^5$ .

4. The battery mounted integrated circuit device in accordance with claim 1, wherein said first diffusion layer and said second diffusion layer have a positive potential.

5. The battery mounted integrated circuit device in accordance with claim 4, wherein said positive potential is not less than a potential of said positive electrode with respect to said negative electrode.

6. The battery mounted integrated circuit device in accordance with claim 1, wherein said first diffusion layer surrounds said region where said solid state battery is mounted.

7. The battery mounted integrated circuit device in accordance with claim 1, further comprising a wiring layer for connecting said first diffusion layer with the outside.

8. The battery mounted integrated circuit device in accordance with claim 1, further comprising a potential controlling section for controlling a potential to be applied to said first diffusion layer and said second diffusion layer.